UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,165	07/29/2003	Yoichi Sano	Hiroshi Tanaka C-3	5995

23474 7590 03/30/2006

FLYNN THIEL BOUTELL & TANIS, P.C.
2026 RAMBLING ROAD
KALAMAZOO, MI 49008-1631

EXAMINER	
NICHOLAS, SMITH A	

ART UNIT	PAPER NUMBER
1742	

DATE MAILED: 03/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/629,165	SANO, YOICHI	
	Examiner	Art Unit	
	Nicholas A. Smith	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claims Status

Claims 1 and 2 have been cancelled. Claims 3-11 remain for examination. Claims 12-15 are new.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 3-4, 6-8 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shirota et al. (US Patent No 6,464,845) in view of Yamaguti et al. (US Patent No. 5,445,722).

Regarding claim 12, Shirota et al. teaches a method for producing acidic and alkaline electrolyzed water using a two-chamber electrolysis cell (see figure 2A). The cell consists of an anode 2e inside an anode chamber 2a and a cathode 2f inside a cathode chamber 2c. The two chambers are divided by a diaphragm 2g. An electrolyte is added to the water to be electrolyzed (column 9, lines 65-67). Only the water provided to the cathode is previously softened. Shirota et al. teaches that the water used in the anode chamber is tap water, i.e., not softened water. See column 10, lines 1-5 and 21-25. In reference to a similar alkaline ionized water and acidic water apparatus as described in Figure 1A, Shirota et al. clearly discloses using pure water (column 7, lines

41-50) to feed the reservoir [Figure 1A (4)]. One skilled in the art knows pure water lacks ions, which by definition would be free of dissolves salts of magnesium, calcium and iron, thus qualifying as the claimed softened water. Said reservoir would also not contain any dissolved salts of magnesium, calcium or iron, as none are added during the process, so reservoir would only be filled with softened water. This reservoir is what feeds the cathode chamber, and thus Shirota et al. teaches feeding softened water to the cathode chamber.

However, Shirota et al. does not teach that the flow rate of water supplied to the cathode chamber is no greater than 40 mL/min per ampere loading current as claimed.

Yamaguti et al. teaches a method for producing electrolyzed water wherein the degree of electrolysis can be controlled in order to obtain water with a desired pH and electrical conductivity. This control is accomplished by varying the ratio between the flow rate of water into the cell and the applied current (column 12, lines 21-30).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Shirota et al. by optimizing the ratio of flow rate in the cathode chamber to applied current as disclosed by Yamaguti et al., because Yamaguti et al. teaches that this ratio is a result-effective variable (column 12, lines 21-30). See MPEP 2144.05 IIB.

Regarding claim 13, Shirota et al. teaches a method for producing acidic and alkaline electrolyzed water using a three-chamber electrolysis cell (see figure 1A). The cell consists of an anode 2e inside an anode chamber 2a and a cathode 2f inside a cathode chamber 2c. There is an intermediate chamber 2b between the anode and

cathode chambers, and the three chambers are divided by diaphragms 2d and 2d'. The intermediate chamber contains an electrolyte solution that can permeate the membranes (column 7, lines 18-26 and 62-66). Only the water provided to the cathode is previously softened. The anode water is tap water (column 7, lines 4-7) and the cathode water is softened (column 7, lines 41-50, also see argument above for claim 12). When a current is applied to the cell, acidic water is generated at the anode and basic water is generated at the cathode (column 7, line 62 to column 8, line 2).

Regarding to the flow rate of the softened water to the cathode chamber, the rejection ground is given above.

Regarding claims 3, 6 and 14, Shirota et al. teaches that the pure water is produced for the cathode chamber using a purifying apparatus containing an ion exchange resin (column 18, lines 19-21).

Regarding claims 4, 7, and 8, it would have been obvious to one of ordinary skill in the ad at the time of the invention to modify the method of Shirota et al. by optimizing the ratio of flow rate in the anode chamber to applied current as disclosed by Yamaguti et al., because Yamaguti et al. teaches that this ratio is a result-elective variable (column 12, lines 21-30). See MPEP 2144.05 IIB.

Claims 5 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shirota et al. in view of Yamaguti et al. as applied to claims 3-4, 6-8 and 12-14 above, and further in view of Su et al. (US Patent No. 5,837,124).

Shirota et al. and Yamaguti et al. teach the features as previously described. Furthermore, Shirota et al. teaches that alkaline water having a pH ranging from 12 to

13 is produced in the cathode chamber, and that this pH range is desirable for its antibacterial effects (see Table 2 and column 21, lines 37-43). Although these references do not expressly teach diluting the electrolyzed water to obtain the desired pH range, it would have been obvious to one of ordinary skill in the art at the time of the invention to adjust the pH of the alkaline water by adding neutral water in order to obtain the claimed pH range, because Shirota et al. teaches that water of this pH is preferred for its antibacterial effects (see Table 2 and column 21, lines 37-43).

However, Shirota et al. in view of Yamaguti et al. does not teach diluting the anode water such that the pH is between 2 and 4.

Su et al. teaches a method for producing electrolyzed water in which the desired pH range of the anode water is from 2 to 4 (column 5, lines 6-18). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Shirota et al. in view of Yamaguti et al. by adjusting the pH of the anodic water by adding neutral water to obtain the claimed pH range, because Su et al. teaches that this range is desirable for preventing formation of scale (column 3, lines 15-18).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shirota et al. in view of Yamaguti et al. as applied to claim 12 above, and further in view of Sawamoto et al. (US Patent US 6,143,163).

Shirota et al. and Yamaguti et al. teach the features as previously described in the rejection of claim 12.

However, Shirota et al. in view of Yamaguti et al. does not teach adding electrolyte to the feed of the cathode chamber.

Sawamoto et al. teaches a method of adding supporting electrolyte to the cathode liquid. (column 1, lines 62-65). It would have been obvious to one of ordinary skill in the art at the time of the invention to add an electrolyte to the feed for the cathode chamber, because Sawamoto et al. teaches that it is desirable to impart ionic conductivity in the apparatus (column 1, lines 62-65).

Response to Arguments

Applicant's arguments filed February 3, 2006 have been fully considered; some arguments are persuasive, while other arguments are not persuasive.

Applicant's arguments are summarized as follows:

1. Applicants have priority to September 12, 2000 in regards to a Japanese Patent Application of which they have claimed to enclose an English-language translation.
2. Applicant states that the Examiner has not shown that the method of producing electrolyzed water comprising a limited water flow rate with respect to loading current (no greater than 40 mL/min./A), feeding softened water to the cathode chamber and feeding unsoftened water to the anode chamber results in no scale deposits on the cathode during the electrolysis process and prevention of precipitation of sludge or scale in lines or tanks in the alkaline water product stream, as demonstrated in example 1 and comparative examples 1-2 (as stated in pages 9-12 in their

specification). They state that this benefit is unexpected in light of the prior art cited by the Examiner.

3. Applicant states that Shirota et al. does not use softened water for the feed stream into the cathode chamber, instead using only recirculated, alkaline, ionized water.
4. Applicant states that Yamaguti et al. and Su et al. do not disclose feeding softened water to the cathode chamber nor do they disclose regulating the flow rate of water into the cathode compartment to 40 mL/min./A or less.

Examiner's response is as follows:

1. In response to applicant's argument that they have submitted an English translation of JP 2000-246249, the PTO has not received such a translation for the purpose of examination. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.
2. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., results of no scale deposits on the cathode during the electrolysis process and prevention of precipitation of sludge or scale in lines or tanks in the alkaline water product stream) are not recited in the rejected claim(s). Although the claims are interpreted in light of the

specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

3. Applicant's argument that Shirota et al. does not disclose using softened water for the cathode chamber supply do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections. Shirota et al. clearly discloses using pure water (column 7, lines 41-50) to feed the reservoir [Figure 2B (4)]. One skilled in the art knows pure water lacks ions, which by definition would be free of dissolves salts of magnesium, calcium and iron, thus qualifying as softened water. Applicant argues said reservoir a source of contamination to the feed stream. No dissolved salts of magnesium, calcium or iron are added during the process, so reservoir would only be filled with softened water.
4. In response to applicant's arguments against the references individually (Yamaguti et al. nor Su et al. do not disclose feeding softened water to the cathode chamber whereas Shirota et al. does. Su et al. Shirota et al. do not disclose regulating the flow rate of water into the cathode, whereas Yamaguti does teach flow rate of water into the cathode with respect to current loading as a results-effective variable. See above argument in claim 12) compartment to no greater than 40 mL/min./A), one cannot show

nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

CONCLUSION

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicholas A. Smith whose telephone number is (571)-272-8760. The examiner can normally be reached on 8:30 AM to 5:00 PM, Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571)-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

***

ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700